CHAPTER 5

ECONOMIC RANKING CALCULATIONS

5-1. Introduction.

Each set of criteria in paragraphs 2-2 through 2-6 specifies a method by which economic rankings are to be assigned to design alternatives. The various ranking criteria are similar in nature and are, for the most part, based on the net LCCs of the alternatives. There are, however, sufficient differences so that it is worthwhile to present, in the paragraphs that follow, brief demonstrations of the application of the criteria and related calculations. With the exception of the discounted payback period determination-which typically require two to four iterations—the calculations are relatively simple and straightforward.

5-2. General economic studies.

Ranking criteria for general economic studies are presented in paragraph 2-2c. Criteria for uncertainty assessment are cited in paragraph 2-2b(9). The examples described in subparagraphs *a* through k below and outlined in table 5-1, illustrate the application of these criteria to the results of LCC calculations. All LCC figures cited below are net LCCs—i.e., the difference between the PWs of all costs and the PWs of all monetary benefits.

a. Example 1, LCC results clearly conclusive. The LCC of alternative B is 50 percent greater than that of alternative A. The LCC results are thus clearly conclusive, so that uncertainty assessment is not required (para 2-2b(9)). Alternative A is ranked higher than alternative B on the basis of LCC alone (para 2–2c(l)); neither initial costs nor fuel/energy consumption enters into the ranking procedure.

b. Example 2, LCC results clearly inconclusive. The LCCs of alternatives C and D are essentially equal. The LCC results are thus clearly inconclusive, so that uncertainty assessment is not required (para 2–2b(9)). Neither alternative can be ranked higher on the basis of LCC alone, so ranking must be based on the tie-breaking criteria of paragraph 2–2c(2). Alternative D is ranked higher because it is lower in initial cost and will consume no more fuel/energy than alternative C.

c. Example 3, LCC results clearly inconclusive. The LCCs of alternatives E and F are essentially equal. The LCC results are thus clearly inconclusive, so uncertainty assessment is not required. Ranking must be based on the tie-breaking criteria of paragraph 2-2c(2). Alternative F is ranked higher because it will consume less fuel/energy than alternative E and will be no more expensive in terms of initial cost.

d. Example 4, LCC results clearly inconclusive. The LCCs of alternatives G and H are essentially equal. The LCC results are therefore clearly inconclusive, so uncertainty assessment is not required. Ranking must be based on the tie-breaking criteria of paragraph 2-2c(2). Before these criteria can be applied, the annual fuel/energy consumption of the two alternatives must be converted to Btu equivalents, as shown in table 5-1. Then, alternative H is assigned the higher ranking because it will consume at least 15 percent less fuel/energy than alternative G and will be less than 15 percent higher in initial cost.

e. Example 5, LCC results clearly inconclusive. The LCCs of alternatives I and J are essentially equal. The LCC results are therefore clearly inconclusive, so uncertainty assessment is not required. Ranking must be based on the tie-breaking criteria of paragraph 2-2c(2). Alternative I is assigned the higher ranking because it will be at least 15 percent less expensive than alternative J in terms of initial cost and will consume less than 15 percent more fuel/energy per year.

f. Example 6, LCC results clearly inconclusive. The LCCs of alternatives K and L are essentially equal. The LCC results are therefore clearly inconclusive, so uncertainty assessment is not required. Ranking must be based on the tie-breaking criteria of paragraph 2-2c(2). Since none of the specific (listed) criteria of that paragraph are satisfied, the two alternatives are assigned the same ranking. The designer would then select, for use in the facility, the alternative which represents the best overall choice in his or her judgment. Here, alternative K would most likely be selected, owing to its lower net LCC and annual fuel/energy consumption.

g. Example 7, LCC results not clear-cut. The LCC results are neither clearly inconclusive nor clearly conclusive. An uncertainty assessment' would be required by the criteria of paragraph 2-2b(9) if the design decision were not a routine one. However, alternative M ranks higher by the criteria of both paragraph 2–2c(1) and paragraph

2-2c(2), so the relative rankings of the two alternatives cannot be affected by the results of an uncertainty assessment. Hence, no uncertainty assessment is needed (para 2–2b(9)), and alternative M is ranked higher.

h. Example 8, LCC results not clear-cut. The LCC results are neither clearly inconclusive nor clearly conclusive. Uncertainty assessment is not required by paragraph 2-2b(9) because this is a routine design decision (see "Notes" column in table 5-l). In such a case, in the absence of an uncertainty-assessment determination, alternative O may be ranked higher on the basis of LCC alone (para 2-2c(1)).

i. Example 9, LCC results not clear-cut. The LCC results are neither clearly conclusive nor clearly inconclusive. Uncertainty assessment is required by paragraph 2-2b(9) because the design decision is not a routine one (the choice of alternative Q is likely to be controversial). Relative rankings then are based on the uncertainty assessment results and the criteria of paragraph 2-2c, as follows:

(1) *High uncertainty.* If the uncertainty assessment shows uncertainty in the LCC results to be high (HI in table 5-l), the LCC results are definitely not conclusive. The LCCs of the alternatives are considered to be comparable, and alternative R is ranked higher according to the first tie-breaking criterion of paragraph 2-2c(2).

(2) *Low uncertainty.* If the uncertainty assessment shows uncertainty to be low (LO in table 5-l), the LCC results are definitely conclusive. Alternative Q is ranked higher on the basis of its lower net LCC (para 2–2c(1)).

(3) *Medium uncertainty.* If the uncertainty assessment shows uncertainty to be in the medium range (MED in table 5-l), the LCC results are neither definitely conclusive or definitely inconclusive. Ranking is then left to the designer's judgment, based on all pertinent factors. In this case, the designer would most likely assign the higher ranking to alternative R, based on its lower initial cost and annual fuel/energy consumption.

j. Example 10, LCCs not determined. If an LCCA has not been conducted, alternatives are to be ranked solely on the basis of initial cost considerations (para 2-2c(l)). Alternative S, with the lower initial cost, is thus assigned the higher ranking.

k. Example 11, LCC results not clear-cut. The LCC results are neither clearly inconclusive nor clearly conclusive, and the design decision is not a routine one (headquarters approval is required). Moreover, in contrast to the situation of subparagraph g above, the alternative with the lower apparent LCC would not be ranked higher according to the tie-breaking criteria of paragraph 2-2c(2), since it has the higher initial cost and annual fuel/energy consumption. Thus, an uncertainty assessment is required by paragraph 2-2b(9). Since the required uncertainty assessment was not performed, the LCCA was not conducted in strict accordance with paragraph 2-2, and rankings must be assigned solely on the basis of initial cost considerations (para 2-2c(1)). Accordingly, alternative V is assigned the higher ranking, based on its lower initial cost.

5-3. Special energy-conservation studies: non-renewable resources.

The ranking criterion for these studies is given in paragraph 2-3c. Ranking is based strictly on net LCC: The alternative with the lowest net LCC is assigned the highest economic ranking, and so on down to the alternative with the greatest net LCC, which is assigned the lowest ranking. If two alternatives have equal or nearly equal net LCCs, they are assigned the same ranking. In a case in which two or more alternatives are tied for the highest ranking, selection should be based on designer's judgment as to which of these alternatives is the best overall choice for the application at hand. Accordingly, in the situation in which alternative A is the most economical of the feasible conventional alternatives, and in which

Net LCC of conventional alternative A = 96.5×10^3 (in ABD $)

Net LCC of energy-saving alternative B = 110×10^3

Net LCC of energy-saving alternative C = 97×10^3,

alternatives A and C, which have nearly equal LCCs, would be tied for the highest rank. Alternative B would be ranked lowest. The designer would select either alternative A or alternative C based on his or her judgment as to which is the best overall choice for the application-in terms of initial cost as well as energy consumption.

5-4. Special energy-conservation studies: renewable resources.

The ranking criteria for these studies are given in paragraph 2-4c. In the absence of special ranking requirements beyond those of the FEMP, the economic rankings of alternatives in the LCCA may be determined and reported in either absolute terms or relative terms. The prescribed measure for determining rankings in absolute

Table 5-1. General Economic Studies Ranking Examples

Example No.	Alter-native	LCC (ABD $ x 10^3)	Initial Costs (ABD $ x 10^3)	Average Annual Fuel/Energy Consumed	Degree of Uncertainty* in LCC Results (HI, MED, LO): From Uncertainty Assessment	Degree of Uncertainty* in LCC Results (HI, MED, LO): Judgment Only	Notes
1	A	40.0	35.0	More than Alt. B		LO	
	B	60.0	20.0	Less than Alt. A			
2	C	35.0	25.9	Essentially Equal		HI	
	D	35.4	24.5				
3	E	35.0	25.0	13,000 KWH		HI	
	F	35.4	24.8	11,500 KWH			
4	G	35.0	25.0	13,000 KWH = 151 x 10^6 Btu		HI	
	H	35.4	27.7	122,200 ft^3 NG = 126 x 10^6 Btu			
5	I	35.0	25.0	13,000 KWH		HI	
	J	35.4	29.8	12,000 KWH			
6	K	35.0	25.0	12,000 KWH		HI	
	L	35.4	24.5	13,000 KWH			
7	M	44.0	35.0	Essentially Equal		MED	
	N	45.8	40.0				
8	O	44.0	31.2	Essentially Equal		MED	Routine design decision
	P	45.8	30.0				
9	Q	44.0	31.2	13,000 KWH	(a) HI	-	Selection of Alt. Q likely to be contro-versial
	R	45.8	30.0	12,000 KWH	(b) LO (c) MED		
10	S	Not Determined	19.0	10,200 KWH		-	
	T		20.5	6,000 KWH			
11	U	44.0	31.2	13,000 KWH	Not Determined	MED	Deviation from criteria--head quarters app-roval required
	V	45.8	30.0	12,000 KWH			

*Uncertainty assessment results HI, LO, MED are defined as follows.

- HI: LCC results shown are definitely not conclusive; LCCs are essentially equal.
- LO: LCCA results shown are definitely conclusive.
- MED: LCCA results are neither definitely conclusive nor definitely inconclusive.

The terms conclusive and inconclusive are defined in paragraph 2-2c(1).
See also paragraph 2-2b(9).

terms is net LCC; criteria to be used in conjunction with this measure are provided in paragraph 2-3*c* and illustrated in paragraph 5-3. The prescribed measure for determining rankings in relative terms is LCC savings. However, two additional relative-ranking measures—the savings-to-investment ratio (SIR) and the discounted payback period (DPP)—may have to be determined in response to special requirements. (All four ranking measures provide the same results in a specific LCCA; that is, an alternative that is ranked most economical in terms of net LCC would also be ranked most economical in terms of LCC savings, SIR, and DPP.) The criteria to be used in conjunction with the three relative-ranking measures are provided in paragraph 2-4*c* and illustrated below. The computation and application of LCC savings are illustrated in paragraph 5-4*a*; the SIR is computed and applied in paragraph 5-4*b*; and the DPP is computed and applied in paragraph 5-4*c*. In the illustrations, a proposed hypothetical energy-saving design, based on the use of a renewable source of energy (like solar energy), will be ranked in comparison with an hypothetical conventional design, representing the most economical design based on the use of fossil-fuel-derived energy only. In accordance with standard practice, the conventional design will be referred to as the baseline alternative (or system) and the energy-saving design as the investment, or the investment alternative (or system)—in the sense that the additional initial costs required for the energy-saving design represent an investment, which will yield a return in terms of cost avoidance for energy consumption.

a. Net LCC savings. The net LCC savings is equal to the net LCC of the baseline alternative less the net LCC of the proposed energy-saving design (ESD).

(1) Example: positive net LCC savings. If the net LCC savings is positive, then the ESD is considered to be cost effective. Accordingly, in the situation in which

Net LCC of baseline system =	$280.0 X 10^3$ (in ABD $)
Net LCC of ESD =	$258.4 X 10^3$
Net LCC savings =	$ 21.6 X 10^3$

the ESD is cost effective and must be incorporated in the facility.

(2) Example: negative net LCC savings. If the net LCC savings is negative, then the ESD is considered to be not cost effective. In the situation in which

Net LCC of baseline system =	$280.0 X 10^3$ (in ABD $)
Net LCC of ESD =	$298.0 X 10^3$
Net LCC savings =	-$18.0 X 10^3$

the ESD is not cost effective and may not be incorporated in the facility.

(3) Example: net LCC savings at or very near zero. If the net LCC savings is equal to zero, or very nearly equal to zero, then the ESD is to be considered neither cost effective nor not cost effective. Accordingly, in the situation in which

Net LCC of baseline system =	$280.0 X 10^3$ (in ABD $)
Net LCC of ESD =	$279.8 X 10^3$
Net LCC savings =	$ 0.2 x 10^3$

the ESD is neither cost effective nor not cost effective. In this situation the designer should decide whether or not to incorporate the ESD in the facility, based on his or her judgment as to the better overall choice for the application at hand.

b. Savings-to-investment ratio.

(1) Calculation and application. The SIR is computed from the PWs of the costs attributable to the ESD and the baseline alternative, as follows:

Step 1: Determine the PW of the net savings due to the ESD. To do so, algebraically subtract the PWs of all operating and maintenance type costs for the ESD from those for the baseline alternative.

Step 2: Determine the extra investment required for the ESD. To do so, algebraically subtract the PWs of all investment, replacement, net salvage, and other capital costs for the baseline alternative from those for the ESD.

Step 3: Form the ratio of the result of step 1 to the result of step 2. This ratio is the SIR.

As indicated previously, the SIR and net-LCC-savings ranking measures are not independent. The SIR will be greater than 1.0 whenever the net LCC savings is positive, less than 1.0 whenever the net LCC savings is negative, and exactly equal to 1.0 whenever the net LCC savings is exactly equal to zero. Accordingly, the energy-saving design will be cost-effective whenever the SIR is clearly greater than 1.0, not cost-effective whenever the SIR is clearly less than 1.0, and neither cost-effective nor not-cost-effective whenever the SIR is equal to—or very nearly equal to–1.0.

(2) Example: SIR calculation. The computations are organized on a sample worksheet and results are rounded to an appropriate number of significant figures. The full worksheet is DA Form 5605-1-R, (Life Cycle Cost Analysis' Savings-To-Investment Ratio (SIR) and Discounted Payback Calculation). It is assumed that the PWs of all the costs related to the conventional alternative and to the ESD have been computed in accordance with the provisions of paragraph 2-4b by the techniques illustrated in chapters 3 and/or 4), and that the results are available. (This is the usual case.) The SIR is calculated from these PWs as follows (the steps are illustrated in fig 5-1):

Step 1: Enter the PWs of all operating and maintenance costs, including fuel/energy costs, for the baseline system, and find their total. Here, this total is 199.5. Do the same for the investment system (the ESD); the total for this system is 152.9. Subtract the investment-system total from the baseline-system total to obtain the PW savings of 199.5 – 152.9 = 46.6. Enter that figure.

Step 2: Enter the PWs of all capital costs (including initial, replacement, and terminal costs) for the baseline system, and find their total; here, the total is 80.5. Do the same for the investment system; that total is 105.5. Subtract the baseline-system total from the investment-system total to obtain the extra PW investment as 105.5 - 80.5 = 25.0. Enter that figure.

Step 3: Divide the net savings by the extra investment to obtain 46.6/25.0 = 1.9 as the SIR for the investment system (ESD).

Because this SIR is clearly greater than 1.0, the investment is considered cost effective, and the ESD must be incorporated in the facility.

SIR Calculation				
Element of Calculation	System	Type of Cost/Benefit		
PW of Operating & Maintenance Costs ☒ $ x 10³ ☐ $ x 10⁶	Baseline	Energy/Fuel	125.1	Step 1
		Other O&M	74.4	
		Total	199.5	
	Investment	Energy/Fuel	70.2	
		Other O&M	82.7	
		Total	152.9	
	Δ	Net Savings	46.6	
PW of Capital Costs ☒ $ x 10³ ☐ $ x 10⁶	Baseline	Initial (MCP)	77.2	Step 2
		Replacements Yr 18	3.4	
		Terminal	-0.1	
		Other	–	
		Total Net	80.5	
	Investment	Initial (MCP)	95.5	
		Replacements	10.1	
		Terminal	-0.1	
		Other	–	
		Total Net	105.5	
	-Δ	Extra Investment	25.0	
SIR	Δ	Net Savings / Extra Investment	46.6 / 25.0 = 1.9	Step 3

Figure 5-1: Example: SIR calculation.

c. Discounted payback period. The discounted payback period is the number of years required to recoup an investment through the net savings it provides, with the time value of money and cost escalation (if any) taken into account. For economic studies involving energy-saving designs (e.g., solar), paragraph 2-4c defines the DPP as that period of time, measured in years from the BOD, which, if used as the analysis period for the LCCA, would result in a net PW savings of zero. An equivalent definition is the following The DPP is the number of years, measured from the BOD, which, if used as the analysis period for the LCCA, would result in an SIR of 1.0. The DPP calculation procedure outlined below is based on this latter definition. It is an iterative (trial-and-error) procedure in which a trial analysis period is first computed, and then a SIR is computed for that trial period. If the SIR is not equal to 1.0, a new trial analysis period is computed (based on the previous results) and a new SIR is found. This process is repeated until a SIR of 1.0 is obtained. Normally, no more than about two to four iterations are required. In these calculations, net salvage values (or terminal values) which arise due to the variation of the trial analysis period are usually ignored. However, if their magnitude is expected to be large enough to alter the results of the computation, they must be taken into account. Net salvage values are usually approximated for this purpose based on an assumption of straight-line depreciation.

(1) Calculation and application. The DPP for an energy-saving investment is calculated as follows:

Step 1: Compute the SIR for the energy-saving design (ESD) by the method of paragraph 5-4b, using an analysis period selected in accordance with the provisions of paragraph 2-3b(3).

Step 2: Use the SIR computed in step 1 and the corresponding analysis period (i.e., the criteria-based analysis period) to compute a trial analysis period n, in years (for which it is hoped that the SIR will equal 1.0).

Step 3: Compute the SIR as in Step 1, using an analysis period equal to the trial analysis period n computed in step 2.

Step 4: If the SIR resulting from step 3 is equal to, or very nearly equal to 1.0, stop. The trial analysis period n is the DPP. If not, use the result of step 3 to compute a new trial' n.

Step 5: Repeat steps 3 and 4 until a particular trial value n results in a SIR that is equal to, or very nearly equal to 1.0. The DPP is that particular trial value n.

As indicated previously, the DPP and the net-LCC-savings ranking measures are not independent. The DPP will be less than the criteria-based analysis period whenever the net LCC savings is positive,. greater than the criteria-based analysis period whenever the net LCC savings is negative, and exactly equal to the criteria-based analysis period whenever the net LCC savings is exactly equal to zero. Accordingly, the energy-saving design will be cost-effective whenever the DPP is clearly less than the criteria-based analysis period, not cost-effective whenever the DPP is clearly greater than the criteria-based analysis period, and neither cost-effective nor not-cost-effective whenever the DPP is equal to—or very nearly equal to—the criteria-based analysis period.

(2) *Example: DPP calculation*. The computations are organized on a sample worksheet and results are rounded to an appropriate number of significant figures. The full worksheet is DA Form 5605-1-R. It is assumed here that the PWs of all costs have been computed in accordance with the provisions of paragraph 2-4b (by the techniques illustrated in chap 3 or 4), and that the results are available. (This is the usual case.) The DPP is computed as follows (the steps are illustrated in DA Form 5605-1-R fig 5-2):

Step 1: The SIR for this 'example was computed in paragraph 5-4b(2). The computation is shown on the SIR-DPP worksheet DA Form 5605-1-R (fig 5-2).

Step 2: (The first trial value n is computed directly below the SIR calculation. For this first computation, both the last trial value n and the last SIR are assumed to be zero. "This n" is the analysis period selected in accordance with the provisions of criteria—here, 25 years.) Follow the steps listed on the worksheet to compute the first trial value n, as follows:

A = this SIR - 1.0 = 1.9 - 1.0 = 0.9

B = this SIR – last SIR = 1.9 - 0 = 1.9

C = ratio of A to B = 0.9/1.9 = 0.47

D = last n - this n= 0 - 25= – 25

E = product of C and D = 0.47 x(-25)= –11.8

F = next n = this n+E = 25 +(-11.8) = 13.2

Round this result to 13 for use as the next trial n; enter n = 13 at the top of the first DPP column in the right-hand block.

Step 3: (first iteration): Compute a SIR based on PW data computed over a trial analysis period of 13 years (instead of the original criteria-based value of 25 years). New PWs must be found for operating and maintenance costs; PWs of initial costs do not change; only replacement costs that are expetted to occur within the first

SIR Calculation				Discounted Payback Calculation				
Element of Calculation	System	Type of Cost/Benefit		Trial Values of Post-BOD Analysis Period, n(years)				
				n = 13	n =	n = 7	n =	n = 10
PW of Operating & Maintenance Costs ☒ $ x 10³ ☐ $ x 10⁶	Base-line	Energy/Fuel	125.1	65.1		35.0		50.1
		Other O&M	74.4	38.7		20.8		29.8
		Total	199.5	103.8		55.8		79.9
	Invest-ment	Energy/Fuel	70.2	36.5		19.7		28.1
		Other O&M	82.7	43.0		23.2		33.1
		Total	152.9	79.5		42.9		61.2
	Δ	Net Savings	46.6	24.3		12.9		18.7
PW of Capital Costs ☒ $ x 10³ ☐ $ x 10⁶	Base-line	Initial (MCP)	77.2	77.2		77.2		77.2
		Replacements	3.4	0		0		0
		Terminal	–	–		–		–
		Other	–	–		–		–
		Total Net	80.6	77.2		77.2		77.2
	Invest-ment	Initial (MCP)	95.5	95.5		95.5		95.5
		Replacements Yr 18	10.1	0		0		0
		Terminal	–	–		–		–
		Other						
		Total Net	105.6	95.5		95.5		95.5
	−Δ	Extra Investment	25.0	18.3		18.3		18.3
SIR	Δ	Net Savings / Extra Investment	46.6 / 25.0 = 1.9	18.3 = 1.3		9 / 18.3 = 0.7		8 / 18.3 = 1.0

Step 1 — Step 2 (First Iteration) — Step 3 (Second Iteration) — Step 3 (Third Iteration)

Next Trial n Value (Years)							
	A = This SIR — 1.0	0.9	0.3		-0.3		
	B = This SIR — Last SIR*	1.9	-0.6		-0.6		
	C = Ratio of A to B	0.47	-0.5		0.5		
	D = Last n* — This n	-25	12		6		
	E = Product of C & D	-11.8	-6		3		
	F = Next n = This n + E	13.2	7		10		

Step 2 — Step 4 (First Iteration) — Step 4 (Second Iteration)

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*In calculating First Trial n Value for Discounted Payback Calculation, Use Last SIR = Last n = 0.

Figure 5-2: Example: DPP calculation

13 years after BOD are included; it is assumed that PWs of terminal costs will not affect the results and so they are ignored. The result is a SIR of 1.3.

Step 4: (first iteration): Since the SIR is not close to 1.0, compute a new trial value for n using

This SIR = 1.3
Last SIR = 1.9
This n = 13
Last n = 25
The result is a trial value n of 7. Enter this value at the top of a new DPP column in the right-hand block.

Step 3: (second iteration): Compute a SIR based on PW data computed over a trial analysis period of 7 years. Again new PWs must be found for operating and maintenance costs, but other PWs do not change from step 3 (first iteration). The result is a SIR of 0.7.

Step 4: (second iteration): Again the SIR is not sufficiently close to 1.0. Compute a new trial value for n with

This SIR = 0.7

Last SIR = 1.3

This n = 7

Last n = 13

The result is a trial value n of 10. Enter this value at the top of a new column.

Step 5: (third iteration): Compute a SIR based on PW data computed over a trial analysis period of 10 years. As in the second iteration, new PWs must be found for the operating and maintenance costs. The result is 1.0; accordingly, the discounted payback period is taken as 10 years-the value of n that results in a SIR of 1.0.

Since this DPP is clearly less than 25 years, the criteria-based value of the analysis period, the ESD is considered cost effective and must be implemented.

5-5. Special studies for innovative/alternative wastewater treatment technology.

The ranking criterion for these studies is given in paragraph 2-5c. Ranking is based solely on net LCC: The net LCC of the highest-ranked innovative/alternative facility is compared to 115 percent of the net LCC of the highest-ranked conventional facility. If the former is equal to or less than the latter, the innovative/alternative facility is ranked higher and must be selected. If two or more conventional alternatives are included in the analysis, they must be ranked according to the provisions of paragraph 2-2c. If two or more innovative/alternative facilities are included, they must be ranked solely according to their LCCs: The alternative with the lowest net LCC is assigned the highest economic ranking. In the situation in which

Net LCC of alternative A (conventional) = 33.8×10^6 (in ABD $)

Net LCC of alternative B (conventional) = 21.2×10^6

Net LCC of alternative C (innovative) = 23.9×10^6

Net LCC of alternative D (innovative) = 30.1×10^6

alternative B would be ranked the higher of the conventional alternatives according to paragraph 2-2c. Alternative C would be ranked the higher of the innovative alternatives on the basis of net LCCs. Then, since

1.15 X net LCC of alternative B = 24.4×10^6 (in ABD $)

Net LCC of alternative C = 23.9×10^6

the innovative alternative C would be ranked highest and implemented.

5-6. Special intra-DOD directed economic studies.

The ranking criteria set forth in paragraph 2-2c and illustrated in paragraph 5-2 apply to these studies, unless otherwise in the directive authorizing the study effort.